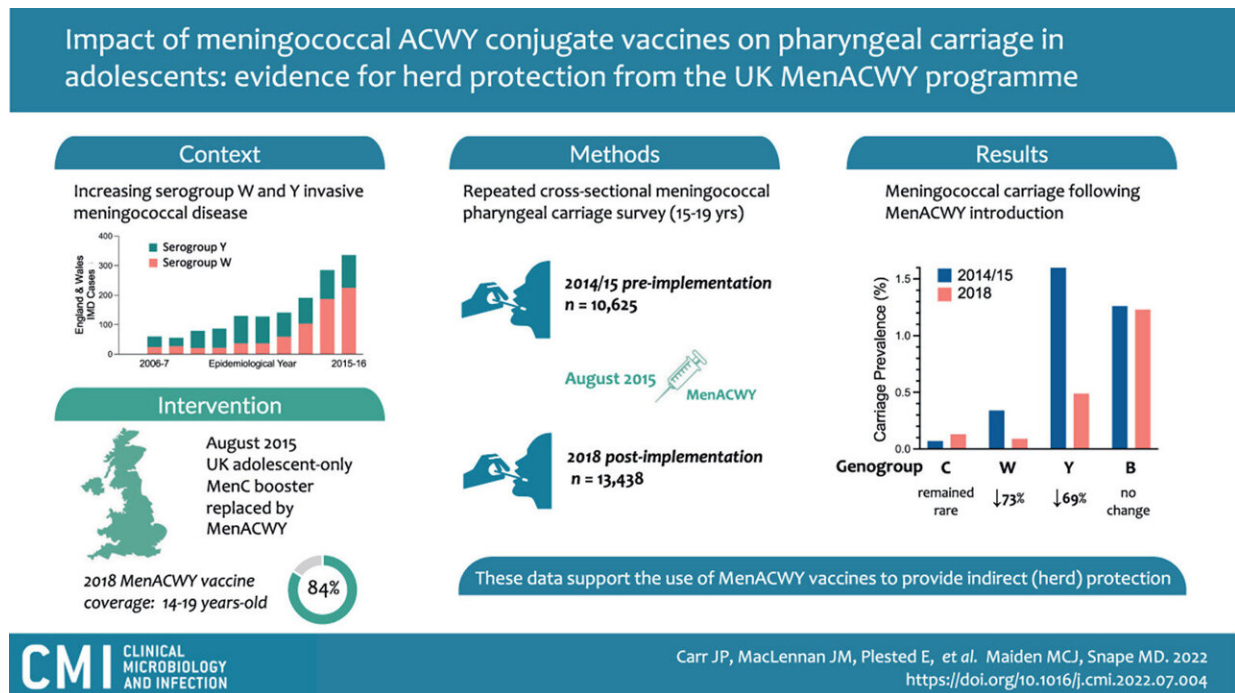


# Teenage meningitis vaccine program found to drive herd immunity across all ages

October 7 2022



Graphical abstract. Credit: *Clinical Microbiology and Infection* (2022). DOI: 10.1016/j.cmi.2022.07.004

Researchers from the University of Oxford have today reported findings from a large-scale study that examined the impact of the UK's MenACWY vaccination program on the carriage of meningitis bacteria in the throats of UK teenagers. They have demonstrated the impact of the vaccine in generating herd protection, also called herd immunity, that

protects all age groups

In the study, which is published in *Clinical Microbiology and Infection*, the researchers took throat swabs and assessed the prevalence of meningitis causing bacteria before and after the introduction of the vaccination program, using two cross-sectional studies conducted almost four years apart. They found the [vaccine](#) substantially reduced carriage of the W and Y meningococcal groups, and sustained low levels of the C group.

In 2015, responding to rising rates of meningitis cases driven by the W and Y strains from 2009 onwards, the UK replaced a vaccine targeting only the C group (introduced in 1999) with quadrivalent MenACWY vaccines. To leverage herd immunity effects, the vaccination program enrolled teenagers aged 14 to 19, where transmission of the meningococcal bacteria is known to be highest.

One of the lead authors, Matthew Snape, who was Professor in Pediatrics and Vaccinology at the Oxford Vaccine Group during the study, says that "these studies report the results of throat swabs taken from over 24,000 teenagers in more than 170 [secondary schools](#) across the country, showing yet again the fantastic enthusiasm of the UK public for taking part in research."

"The results show us that by immunizing teenagers with MenACWY vaccines we not only protect them directly, but also reduce the risk of all others in the community suffering from meningitis and sepsis due to these bacteria."

"Immunizing teenagers rather than infants means we get more benefit out of each dose given. These two studies therefore provide invaluable data to help us use these vaccines effectively, both in the UK and internationally."

The researchers compared two studies—the UKMenCar4 study, conducted September 2014 to March 2015 before the MenACWY vaccine was introduced, and Be on the TEAM study, conducted March 2018 to November 2018 after the vaccine was introduced.

Data from 24,062 students aged 15 to 19 were included: 10,624 from UKMenCar4 and 13,428 from Be on the TEAM. The researchers concluded:

- C, W, and Y meningococcal carriage decreased from 2.03% to 0.71%;
- carriage of the W group decreased from 0.34% to 0.09%;
- carriage of the Y group decreased from 1.6% to 0.5%; and
- carriage of the C group remained rare (0.07% to 0.13%).

The findings align with data from UK has showing that the incidence of MenW disease has fallen in all [age groups](#) since the teenage MenACWY vaccine campaign; not just in teenagers themselves. Taken together these data provide strong evidence for the need to target age groups with high rates of meningococcal transmission to make most effective use of these vaccines, and not necessarily immunizing other age groups at high risk (e.g. infants), add the researchers.

Martin Maiden, professor of molecular epidemiology at the Department of Biology, University of Oxford, lead author on the paper says that they "have been systematically investigating meningococcal vaccination and its effects on carriage in Oxford since 1999. These studies have been crucial in enabling the most effective use of meningococcal vaccines around the world."

"In combination with our work with colleagues at Public Health England (now HSA) that characterized the MenW epidemic variant at the genomic level, this work helped to interrupt an epidemic that would

likely have affected thousands of individuals. This demonstrates the importance of long-term studies that permit the anticipation of epidemics and pandemics and enables them to be curtailed before they impact the population too severely."

Dr. Tom Nutt, chief executive of the charity Meningitis Now, which played an important role in facilitating Be on the TEAM, says that "meningitis is a devastating disease that can strike anyone at any time and leave havoc in its wake. Many [young people](#) will know of someone from their community whose life, and that of their family and friends, has been torn apart by its impact."

"We're delighted to see that this important study has demonstrated such positive results for not just young people's health but across the wider community too. Now we need to redouble our efforts to encourage all those who are eligible for their free MenACWY vaccination to take advantage of it."

Liz Rodgers, head of research of the charity Meningitis Research Foundation, which played an important role in facilitating Be on the TEAM, says that they "are delighted to have contributed to this important research initiative, which has provided evidence of MenACWY vaccine protection extending to the wider population."

"With many teenagers across the country about to start or return to university, achieving high uptake of MenACWY vaccine is ever more important, so we urge all teenagers and young adults to check they are up to date with their routine immunisations."

Professor Nick Lemoine of the National Institute for Health and Care Research (NIHR) says that "this NIHR-supported study has provided important data on the effectiveness of MenACWY vaccines in inducing population immunity against meningitis—which has been shown to

protect all ages against this potentially life-threatening disease. We want to thank the incredible 24,000 teenage participants who took part for their contributions."

Public Health and Mental Health Minister Dr. Caroline Johnson says that "this study shows why the MenACWY vaccination program is so important, allowing young people to protect themselves and in turn all age groups from this potentially life-threatening disease."

"Vaccination remains the best line of defense against infectious diseases, including meningitis, and I encourage everyone eligible to take up their free jab."

**More information:** Jeremy P. Carr et al, Impact of meningococcal ACWY conjugate vaccines on pharyngeal carriage in adolescents: evidence for herd protection from the UK MenACWY programme, *Clinical Microbiology and Infection* (2022). [DOI: 10.1016/j.cmi.2022.07.004](https://doi.org/10.1016/j.cmi.2022.07.004)

Provided by University of Oxford

Citation: Teenage meningitis vaccine program found to drive herd immunity across all ages (2022, October 7) retrieved 27 April 2024 from <https://medicalxpress.com/news/2022-10-teenage-meningitis-vaccine-herd-immunity.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--